International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 04 ISSUE 08 PAGES: 39-43
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ijmscr

Research Article

EFFECTIVE RESOURCE MANAGEMENT IN MEDICAL FACILITIES THROUGH ARTIFICIAL INTELLIGENCE

Submission Date: Aug 21, 2024, **Accepted Date:** Aug 26, 2024,
Published Date: Aug 31, 2024
Crossref doi: https://doi.org/10.37547/ijmscr/Volume04Issue08-06

Jiyanbayev Otabek Eshdavlatovich
Center for the Development of Professional Qualifications of Medical Workers, Uzbekistan

Abdullayev Ibroximjon Nigmatilla o'g'li
Center for the Development of Professional Qualifications of Medical Workers, Uzbekistan

ABSTRACT

Artificial intelligence (AI) technologies are widely used in the medical field. This article analyzes the methods of effective management of resources using SI in medical institutions and their economic solutions.

KEYWORDS

Artificial intelligence, medical facilities, resource management, economic solutions.

INTRODUCTION

Effective management of resources is important in modern medical institutions. Improper allocation and management can lead to wastage of resources, which causes significant economic losses for institutions. Artificial intelligence technologies provide a wide range of opportunities to optimize and manage these processes more effectively. The purpose of this article is to study the methods of resource management with the help of SI in medical institutions and to consider economic solutions.

The role of artificial intelligence in medicine

International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 04 ISSUE 08 PAGES: 39-43
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

Artificial intelligence technologies are widely used in the medical field. Various SI technologies, such as data analysis, machine learning, natural language processing, and image recognition, are used in practices such as diagnosis, treatment, patient monitoring, surgery, and data analysis. These technologies allow increasing efficiency and optimal allocation of resources in medical institutions.

Resource management in medical institutions

Effective resource management in medical facilities requires proper allocation of various resources such as human resources (doctors, nurses), material resources (medicines, equipment) and time. Improper allocation and management can lead to wastage of resources, which causes significant economic losses for institutions.

Resource management methods using artificial intelligence

Artificial intelligence (AI) technologies offer a number of methods for effective resource management in medical facilities. Below are their main types:

1. Data analysis and forecasting

Data collection: In medical facilities, the database contains a large amount of information. Electronic medical records, patient histories, diagnostic results and other medical documents are collected and stored with the help of artificial intelligence. The main purpose of data collection is to improve the quality of medical services and optimize the decision-making process.

Data Analysis: SI algorithms are used to analyze data and identify trends. Through this process, changes related to certain diseases or patients' conditions can be detected. Machine learning, statistical modeling and big data processing techniques are used in the analysis process.

Forecasting: Allows forecasting of future needs based on results obtained from data. For example, by analyzing patients' data, it is possible to predict their future treatment needs. Regression analysis, time series analysis and other statistical methods are used in the forecasting process.

Decision trees: Decision trees are used to make optimal decisions in resource allocation. This algorithm facilitates data-driven decision-making when managing patient or facility resources. For example, when choosing which treatment method or equipment to use, decision trees can be used to select appropriate options.

Neural Networks: Neural networks are used to provide precision in complex data analysis and resource management. They are used in the analysis of medical images, monitoring of patient treatment processes and resource management. There are different types

International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 04 ISSUE 08 PAGES: 39-43
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

of networks such as Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN).

Observational study: Used to track patients' treatment progress and provide needed resources in a timely manner. With this method, it is possible to monitor the condition of patients in real time, determine their needs and provide resources accordingly.

2. Optimization algorithms

Genetic Algorithms: Genetic algorithms are used for optimal allocation of resources. These algorithms simulate the process of biological evolution to test different options and choose the best solution. For example, in medical institutions, it is used to optimize the work schedule of employees or manage the stock of medicines.

Simulation methods: Used to simulate processes in medical facilities and determine the best methods. With the help of simulation, different scenarios and their results are considered, through which the most effective approach to resource management can be determined.

Automated scheduling

Workforce Management: Employee scheduling can be done using automated scheduling systems. With the help of SI systems, it is possible to automatically plan and manage employees' working hours, vacations and other factors.

Stock management: Monitoring the stock of drugs and equipment using automated management systems. These systems help control stock levels, plan delivery processes, and prevent excess or shortage of stock.

Effective management of resources in medical institutions with the help of artificial intelligence includes several methods:

Faster and more accurate diagnosis of patients: Faster and more accurate diagnosis of patients with SI analyzer systems, which helps to save time and resources.

Optimizing treatment processes: Effective management of resources by selecting appropriate treatment methods for patients and controlling processes.

Workforce planning: Work time planning and optimal allocation of employees using SI, which avoids wastage of employees.

Effective Medicines and Equipment Management: Prevent wastage of resources by tracking drug and equipment inventory and optimizing supply chains.

Economic solutions

Effective management of resources in medical institutions with the help of artificial intelligence provides the following economic solutions:

1. Cut costs

International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 04 ISSUE 08 PAGES: 39-43
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

With the help of artificial intelligence, costs can be reduced by efficient allocation of resources:

Optimal resource allocation: With the help of artificial intelligence systems, medical equipment and personnel are allocated according to the needs of patients, which reduces unnecessary costs.

Fast and accurate diagnosis: Artificial intelligence algorithms speed up diagnostic processes and increase accuracy, which reduces unnecessary analyzes and treatments.

Automated processes: Automation of planning and management processes reduces human error and saves time, which lowers overall operating costs.

2. Increase income

Effective resource management enables faster and more accurate patient care, which helps increase revenue:

Optimizing patient flow: AI-powered patient flow and queue management systems ensure faster patient service, enabling more patients to be admitted and treated.

High quality of treatment: With the help of artificial intelligence, the treatment process of patients is optimized, which leads to increased patient satisfaction and referral of services by them.

Diversification of services: Artificial intelligence provides opportunities to introduce new medical services and diagnostic methods, which creates new sources of income for institutions.

Avoiding waste due to misallocation of resources can be done with the help of artificial intelligence:

Inventory control: Tracking and managing inventory of drugs and medical equipment with the help of artificial intelligence systems helps to prevent wastage. For example, expired or surplus medications are periodically renewed.

Medical Data Analytics: Improve resource efficiency by identifying and eliminating inappropriate or unnecessary treatments for patients.

Work Time Management: Prevent inefficient use of employees by optimizing employee work hours and schedules with the help of artificial intelligence.

Examples and Experiences

The practice of resource management with the help of artificial intelligence can be seen through successful projects used in medical institutions around the world:

United States: Institutions such as Mayo Clinic and Cleveland Clinic are successfully using artificial intelligence to speed up diagnostic processes and optimize treatment. These institutions use artificial

International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 04 ISSUE 08 PAGES: 39-43
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

intelligence to manage patient flow and monitor drug stocks.

Japan: Japanese hospitals are widely using SI to plan and monitor surgical operations, as well as remote patient monitoring. This allows to provide quick and accurate care to patients.

Uzbekistan: A number of experiments on the use of artificial intelligence in medicine are also being conducted in Uzbekistan. Diagnostic systems and patient monitoring systems are being implemented in medical institutions of Tashkent using SI.

CONCLUSION

Artificial intelligence technologies expand the possibilities of effective management of resources in medical institutions. With the help of SI, it is possible to optimize the processes of diagnosing and treating patients, planning the work of employees, monitoring the stock of drugs and equipment. This allows you to reduce costs, increase revenue and prevent waste.

REFERENCES

1. Russell, S., & Norvig, P. (2016). Artificial Intelligence: A Modern Approach. Pearson.
2. Gadaev, A., Ismoilova, M., & Turakulov, R. (2022). Comparative analysis of calprotectin and helicobacter pylori in the faces and interleukin-6 in the blood of patients with and without COVID-19 before and after the treatment. Scientific Collection «InterConf+», (26 (129)), 236-242.
3. Koch, C. (2018). The Quest for Consciousness: A Neurobiological Approach. Roberts & Company.
4. Ismoilova, M. I. (2022). Comparative Analysis of Calprotectin and Helicobacter Pylori in the Faces and Interleukin-6 in the Blood of Patients with and without Covid-19 Before and After the Treatment. Central Asian Journal of Medical and Natural Science, 3(5), 218-222.
5. Hastie, T., Tibshirani, R., & Friedman, J. (2009). The Elements of Statistical Learning: Data Mining, Inference, and Prediction. Springer.
6. Chaudhuri, S., & Dayal, U. (1997). An Overview of Data Warehousing and OLAP Technology. ACM SIGMOD Record, 26(1), 65-74.
7. Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning. MIT Press.
8. Breiman, L. (2001). Random Forests. Machine Learning, 45(1), 5-32.